Stukel Mountain - Allotment #0815 is the portion of the mountain in the middle of picture
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Stukel-Dehlinger C. Allotment - #0815
Rangeland Health Standards Assessment (RHSA)

Introduction/Background

The Stukel-Dehlinger C. allotment (#0815) is located within the northwest portion of Stukel Mountain, which lies about 8 miles southeast of Klamath Falls, Oregon. This 1,680 acre allotment is an irregular, though contiguous (blocked) parcel of public land that is used in conjunction with 1000+ acres of adjacent, fragmented private lands. These private lands are owned/controlled by the grazing lessee and lie immediately next to about one-half of the external boundary of the BLM block (see map). Due to the steep mountainous nature of the area, a roughly 40% of both public and private lands are marginally accessible to cattle. The allotment is loosely divided into two portions - the west side and the east side - by an internal drift fence that runs up the northern ridge of Stukel Mountain proper. This fence is probably in need of maintenance, but has functioned in the past in the implementation of a two pasture rotation system. The boundaries of the allotment are at least partially fenced on the west, north, and east. The eastern boundary fence is known to be in functional condition as it was rebuilt in 1996-97 by the BLM range staff. The other fences vary from functional to almost useless.

The existing grazing preference is 240 AUMs - 63 head with a season of use of 4/15 to 8/8. From 1988 to 1997 an additional 46 AUMs of grazing use was allowed via an exchange-of-use "credit" for the unfenced private lands. This additional use is not currently being authorized as it is discretionary and has probably contributed to past overuse, as will be discussed in this Assessment. Stukel-D.C. is a lower priority "I" category allotment that was identified in the 1995 *Klamath Falls Resource Area Record of Decision and Resource Management Plan* (ROD/RMP) as in need of a reduction of 90 AUMs from the existing preference. Prior to 1989, the season of use was longer - 4/16 to 9/15. The grazing period was shortened by informal agreement in 1989 in an apparent attempt to reduce the impacts of season long grazing. Several other management changes have been made with the intent of minimizing grazing impacts. From 1976 to 1987, the grazing license stated the following: "*Hold cattle below the 4800 foot elevation until June 30 of each year*". Since all of the BLM lands are at or above that elevation, the practical effect of this requirement was to keep the cattle on the lower, private lands early and indirectly shorten the season on the BLM. Intermittently during the late 80's and early 90's, the licensed grazing was split so that the early use (mid April to mid May) was to be made

in the smaller west side of the allotment and the later use (mid May to early August) being made in the larger eastern portions.

The ROD/RMP recommended a 5/1 to 7/1 season of use, in conjunction with the AUM reduction, to limit observed overgrazing and improve resource conditions. However, the ROD/RMP (page H-1) also stated that "*All changes to...livestock grazing management will be made through the monitoring and evaluation process...*" Though a small allotment, ample monitoring information has been collected because of its "I" category ranking, though some of the information is of questionable quality (explained later). This Assessment will be an evaluation of that information to determine if current livestock grazing management is meeting resource objectives..

This allotment had three "Identified Resource Conflicts/Concerns" noted in the ROD/RMP (Appendix H, page H-21) which will be addressed, implicitly or explicitly, by one or more of the Standards in this Assessment. The conflicts/concerns are as follows:

Identified Resources Conflicts/Concerns	**Management Objectives**
Under current management the range condition, level or pattern of utilization, and/or season-of-use may be unacceptable; or carrying capacity may be exceeded.	Maintain or improve rangeland condition and productivity through a change in grazing management practices, timing, and/or level of active use.
Critical deer winter range occurs in allotment.	Management systems should reflect the importance of deer winter range.
Active erosion occurs in the allotment.	Maintain and improve erosion condition in moderate or better erosion condition.

The allotment was originally ranked as an overall "C" category allotment during the first round of Selective Management classification completed on 9/21/1982. Categorization of grazing allotments has been required by Bureau policy since the early 1980's in order to direct limited manpower and funding to resource problem areas that need it and would benefit most. A brief summary of the categorization efforts follows as it is indicative of relative resource concerns past and present. ("I" or "Improve" allotments have the highest priority resource concerns, "M" or "Maintain" allotments are moderate priority; and "C" or "Custodial" allotments are the lowest resource priority, usually due to small size and/or lack of ability to make significant change. (See the ROD/RMP Appendix H, pages H-69-70 for further information on the allotment categorization - "selective management" - process.):

1982 Ranking
#1 - Range Condition: Satisfactory ("M" ranking).
#2 - Forage Production Potential: Production is moderate to high & present production near potential. ("M" ranking)
#3 - Resource Use Conflicts: Limited conflicts or controversy may exist. ("C" ranking)...with reference to narrative (below).
#4 - Economic Returns: No opportunities for positive economic returns or no developments proposed. ("C" ranking)
#5 - Present Management: Satisfactory or is only logical practice. ("C" ranking)

The following notes were made on the rating form in 1982: *"Rec/livestock conflicts. Private land owners*

resent public on private lands." However, on 8/25/1989, the resource area range conservationist at the time changed most of the ranking categories to "I" based on "professional opinion" and changed the final ranking from "C" to "I". The following comment supporting the change was added to the 1982 rating form: *"Changed to "I" category due to high value wildlife and recreation resource potential that is in conflict with grazing management."* The "I" category ranking was carried forward into the 1995 ROD/RMP, though no recreation/grazing related "Identified Resource Conflict/Concern" was identified.

The sections immediately following are some various informational summaries that will assist in the Standards assessments that follow.

Grazing Use: The Stukel-D.C. allotment has been largely in non-use in recent years (1997-2000). It was activated in 2001 when the base property owners leased the allotment to another lessee that grazes on a neighboring allotment (Jeld Wen #0822 - which is the subject of an Assessment also to be prepared in 2002). The stated reason for the recent non-use was the conflicts between the cattle operations and the high public use of the area (covered later). Prior to 1997, the allotment received grazing use in most years and at times was grazed heavily. The following is a summary of the licensed/actual use for the past 25 years. Some years have corresponding monitoring/observational data to compare the use against, though most years don't:

	Cattle # [4]	**Season-of-Use**	**Total Use** [3]
2001[1]	Licensed use numbers were for 63 head, 4/15 - 8/8. Actual use reported was 150 cattle from 4/25 to 7/1, but this was the combined use for both of the lessee's allotments - 0815 & 0822. In discussing the use with lessee the actual use was more like the 150 cattle for two or three weeks (70-100 AUMs), after which time the primary water hole (Dehlinger pond) dried up and the cattle left the Stukel-D.C. allotment for the private lands in #0822.)		
1998-2000	Allotment in approved non-use		
1997[1]	Use licensed, but none made according to actual use statement. Utilization monitoring found some cattle grazing use evidence in the west pasture (saddle area).		
1996[1]	75	4/20 - 8/10	279 AUMs
1995[1]	75	4/22 - 7/22	227 AUMs
1994[1]	75	4/22 - 6/26	163 AUMs
1993[1]	45-75	4/28 - 8/15	226 AUMs
	(75 head put on 4/28, 30 removed 7/1, with rest removed 8/15)		
1992[1]	75	4/17 - 4/20	10 AUMs
	(According to file notes, the cattle were only on 4 days then removed due to no livestock water, i.e. drought year. Actual use stated "Very little grass and water".)		
1991[1]	75	4/25 - 7/20	215 AUMs
	(Cattle removed early in 1991 due to drought conditions affecting livestock water availability.)		
1990 [2]	75	4/15 - 8/8	286 AUMs
1989[1]	65	4/15 - 8/8	251 AUMs
1988[1]	64	4/17 - 7/1	160 AUMs
	(Cattle also removed early this year due to drought conditions affecting livestock water availability.)		
1987	Allotment in approved non-use		
1976-86 [2]	60	4/16 - 9/15	240 AUMs

1. Actual use information.
2. Licensed use; no actual use information available.
3. Total grazing use, including exchange-of-use for private lands.
4. Number of cattle may be over the permitted 63 head due to the exchange-of-use addition.

Public Use Conflicts: A chronic problem that has been documented in the files over at least the past 40 years (as far as observational records go back) is related to the high public use of the Stukel Mountain area for various recreational pursuits. The following is a sampling of the public use problems noted by BLM personnel in 1972:

- *"Snowmobilers have cut fence."*
- *"Cyclist scare livestock off higher elevations."*
- *"Cattle get out of lease area because recreationist(s) leave gates open or tear them down."*
- *"A lot of shooting but have only lost one cow."*
- *"Communication lines to towers on top had over 300 holes shot in it two years ago."*
- *"Suspected poaching because people on mountain all times of day and nite* (sic)*."*

Nothing has changed since 1972 except that the recreation use is probably higher. The closeness to town and relatively easy access makes Stukel Mountain a prime area for a myriad of recreation practices - occasionally illicit. This popularity has caused periodic problems for the grazing lessee, primarily from private land trespass, which is a function of the BLM lands abutting their private lands with the boundaries ill-defined. There have been some reported incidents of cattle shot, shot at, and possibly stolen. These are the primary reasons the lessee verbally stated that they wished non-use during the late 1990's. A lot of the recreation activities result in garbage dumping on public and private lands. This is often as a result of target shooting activities (a legal activity on the public lands) where the shooter brings and then leaves behind shot-up junk (not a legal activity). The area does have a winter closure period from mid November through mid April, where the gate at Hill Road is closed. The closure and winter conditions in general limit access severely at this time. The rest of the year the area is open and experiences heavy public use.

Land Use Planning: During the early stages of the KFRA RMP process (1990-1991), most grazing allotments in the KFRA were generally evaluated by an interdisciplinary team (IDT) - known at the time as the "mini core team". For the Stukel-D.C. allotment an assortment of condition issues and concerns were raised at the January 14, 1991 meeting. The pertinent (to livestock) resource related issues and concerns from that meeting follow:

> Range Management: Before the reorganization, this allotment was historically neglected by the District since its creation. Consequently, the permittee had no use supervision. The cows stayed on Stukel Mountain from April until the snows or hunters drove them home in the fall. The average utilization in this allotment is 70-90% on key forage plants, which is in the heavy to severe category (see the allotment file for photos and utilization studies). This level of utilization is not sustainable. The allotment evaluation performed in 1990 stated that there was enough data collected for this allotment in previous years to make any adjustments that are needed. Too many cows for too long is a problem in this allotment; we need to reduce the carrying capacity and change the season of use. The preferable season of use for this mountain (for alternative C or the preferred alternatives) is May

1 - July 15. We need to manage Stukel Mountain as a whole; as is, there are too many variations in the season of use between adjacent allotments.
Wildlife: ...This allotment contains critical deer winter range, and deer use is high; however, the browse used by the deer is being overutilized by livestock. (*See Standard 5 for complete quote.*)
Watershed: Overutilization and erosion are concerns.
Botany: *Rorippa columbiae* (Columbia cress) is a Federal Candidate Category 2 species that has been mapped along the seasonal stream in section 3. It can be found in moist soils in this area. To promote biodiversity, the grazing impacts in this allotment need to be reduced.

No evidence of the noted *"...allotment evaluation performed in 1990..."* can be found in the files and the *"...reorganization..."* noted is the creation of the Klamath Falls R.A. in the early 1980's as a detached area office out of the Lakeview District. The lists of resource issues which resulted from these team meetings ultimately led to the creation of the allotment specific "Identified Resource Conflicts/Concerns" in the KFRA ROD/RMP, Appendix H. These mini-core team identified resource concerns add to the body of knowledge which indicates grazing use on this allotment has been problematic at times. These concerns will be addressed in this Assessment.

Additional Assessment Process Notes:

Bureau policy and direction articulates a preference that RHSA's be done at the watershed scale, unless "compelling" reasons dictate a different assessment boundary. Since no watershed analysis is planned for Stukel Mountain, the area allotments will be assessed individually. Since grazing management - and changes to such - must be effected physically at the allotment level and administratively at the permit/lease level, evaluation and assessment at an allotment scale is appropriate. Typically, cattle use stops/begins at an allotment boundary fence. This assessment process is also in accordance with current direction and policy guidance, including the recent Rangeland Health Standards Handbook, H-4180-1.

Some of the information discussed under one Standard may be discussed under one (or more) of the other Standards. This is partially due to the same monitoring or observational information being used to address several Standards. The bulk of the monitoring information is discussed in the first Standard because the allotment is upland in nature and the first Standard on upland functionality makes a convenient location for most of the analysis.

The condition or degree of function of an area in relation to the Standards and its trend toward or away from any Standard is determined through the use of reliable and scientifically sound indicators - known as "Indicators of Rangeland Health". The H-4180-1 Handbook defines an "indicator" as: *"Components of a system whose characteristics (presence or absence, quantity, distribution) are used as an index of an attribute (e.g. rangeland health attribute) that are too difficult, inconvenient, or expensive to measure".* Though the Handbook encourages the use of "*...dissimilar indicators...*" for each Standard, there is rarely enough information available to have unique indictors for each Standard. Examples of indicators can include ecological condition ratings, plant cover and productivity, different erosional attributes, and many other potential ones. In this assessment area there has been some limited grazing related information collected due to its moderate priority status. Thus, there are a few quantitative and qualitative indicators that can be used for this Standards assessment. There are also some studies -

most notably utilization - which in itself is not an indicator as defined above, but is a well accepted measurement of a primary stressing agent (grazing) which is linked closely with changes in functionality. The indicators and studies used are explained in the assessment that follows. (Note: The brief description of the Standard in bold, is quoted from the approved *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington - August 12, 1997*.)

The "Guidelines for Livestock Grazing Management" comprise a set of concepts to consider when evaluating the current or proposed grazing management of an area against the 5 Standards. To quote the 4180 Handbook, a "guideline" is: "*A practice, method or technique used to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help mangers achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate.*" The actual Oregon/Washington Guidelines for Livestock Grazing Management are included with this assessment, for informational purposes, as Appendix 1.

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STANDARD 1 - WATERSHED FUNCTION - UPLANDS (Upland soils exhibit infiltration and permeability rates, moisture storage and stability that are appropriate to soil, climate and land form.)

> **The primary information/monitoring to be used in evaluating this Standard are the observations from utilization point readings and use pattern mapping; recent "Rangeland Health Evaluation Summary Worksheets" prepared at two representative locations on the allotment; view photo points taken over a 16 year span of time; miscellaneous information and file notes found in the grazing and allotment files; and the application of professional judgement to the information by BLM personnel who have monitored and are familiar with the area. The indicators that this information helps address are: plant cover, litter, composition, production, age class and community structure; level of erosion and overland flow.**

Rangeland Health Evaluation Summaries: During October of 2001, this allotment was qualitatively assessed using the process outlined in Technical Reference 1734-6, "*Interpreting Indicators of Rangeland Health*". This field assessment was performed by a small BLM team consisting of two rangeland management specialists and two botanists. A "Rangeland Health Evaluation Summary Worksheet" - a.k.a. Upland Proper Functioning Condition (PFC) - was prepared at each of the two representative locations on the allotment. The field visit was also documented in a memorandum to the allotment files dated 10/18/01. The pertinent information from that memo is quoted below:

Site #1: Located in and representing the eastern portions of the allotment (east pasture).

> The first upland PFC write-up was done near utilization point #3 which is located approximately 0.24 miles west of the dugout Dehlinger waterhole. This is a low sagebrush/bluegrass dominated area with gentle slopes that received the bulk of the grazing use this year (light use overall - see use map/utilization information in file). This site is intermingled with areas that are being heavily

> invaded with juniper, though the write-up was in a relatively pure low sagebrush site. Contrary to what we expected, the overall vegetation conditions at this site were very good - especially considering it is on Stukel Mountain and has been identified as a problem area in the RMP. Without a doubt, conditions have improved significantly in the area since I first began looking during the summer of 1992 (10 growth seasons). Though some site deterioration from past grazing use was in evidence (primarily erosional in nature), it appears that current grazing use is relatively appropriate for the area. The area was rated as generally having "slight" departure from the ecological site description. See the Summary Worksheet for more information.

Site #2: Located in and representing the western portions of the allotment (west pasture).

> The second write-up was done in a mountain big sagebrush/bunchgrass area above (east of) the "saddle" in the northwest portion of the allotment. This site was also found to be in good condition (late seral in ESI parlance). This area was rated as having "none to slight" departure from the ecological site description/reference area. (Note: There really is no precise existing ecological site description for this type area. Our current bunch of site descriptions are really tailored for the Gerber Block, though there are some older (1989), unrevised site descriptions still included - descriptions that would be invariably altered if we were to expand the ESI out into the rest of our eastside lands someday. The comparison here was made against a composite ideal of a couple similar loamy type ecological sites, i.e. Shrubby Loam 16-20" and North Slopes 14-18". In actuality, this writeup area could act as - and probably will be used as - a reasonable reference area for future comparisons of similar sites.) Grazing use at this site was slight and juniper invasion is a current and ever growing future problem in this and similar big sagebrush sites.

The process that produces these worksheets assesses the current observed conditions against a suitable baseline, typically an ecological site description or ecological reference area, which is defined as follows:

> A landscape unit in which ecological processes are functioning within a normal range of variability and the plant community has adequate resistance to and resiliency from most disturbances. These areas do not need to be pristine, historically unused lands (e.g. climax plant communities or relict areas).

As noted, the pertinent ecological site descriptions were used as reference area surrogates for the evaluation of the upland PFC information. The extensive local field experience of the observers was also an important part of this evaluation. Both of the Stukel-D.C. representative sites were found to have little ("*none to slight*") divergence from estimated reference area functionality for the three major attributes of rangeland health - *Soil/Site Stability*, *Hydrologic Function*, and *Integrity of the Biotic Community*. These upland PFC observations were made at the end of a period of average precipitation (mid to late 1990's) but with limited grazing use which has apparently allowed conditions to restore almost fully as compared to the observations made in the 70's and 80's. The facts of the current good conditions and noted past heavy grazing use seem to conflict with each other. Since both PFC writeup areas have historically received substantial grazing use, these ratings are considered a very positive indicator that functionality has not been compromised by past livestock grazing use, though it does not necessarily validate the high grazing use that did occur (see next section).

Utilization Information: Utilization has been frequently read since 1985 when 4 use zones and

accompanying utilization reading areas were established stratifying the allotment. Use point #1 is in the saddle in the northwest corner of the allotment, #2 is in the north center, #3 in the northeast portion and #4 on the southwestern face of Stukel in the south center of the allotment. Below is the information collected in averaged, summary form:

STUKEL-DEHLINGER C. ALLOTMENT (#0815) - Utilization Information

Year	Average Range of Utilization	Actual Utilization	Growing Use (AUMs)	Yield Conditions	Yield Index (YI)	Desired [6] Use AUMs
1985	82.7%[1]	70 - 90%	240	Average-	(YI=89%)	163 (145)
1986	75.1%[1]	66 - 84%	240	Above average	(YI=129%)	124 (160)
1988	54.3%[1]	42 - 64%	160	Below average	(YI=75%)	196 (147)
1989	75.4%[1]	72 - 80%	251	Average+	(YI=112%)	149 (166)
1990	60.6%[1]	35 - 74%	286	Above average	(YI=117%)	202 (236)
1991	80% [2]	75 - 80%	215	Below average	(YI=77%)	175 (134)
1992	36.5%[3]	13 - 50%	10	Below average	(YI=42%)	NA
1993	41.8%[1]	20 - 50%	226	Above average	(YI= 196%)	138 (270)
1994	37%[1]	37 - 70%	163	Below average	(YI=75%)	294 (220)
1997	[4]					
2001	28.4%[1]	4 - 50% ~85 [5]		Below average	(YI=50%)	299 (150)
				Average Desired Use (AUMs) =		**193 (181)**

1. Acres weighted average based on the 4 use zones delineated in 1985.
2. Utilization read but poor data, though it is fairly clear that the use was heavy.
3. Utilization and actual use conflict making information suspect; not used.
4. Utilization read, but little cattle use made and only light use noted in the west pasture (use point #1). No usable information.
5. Cattle made some short term (2-3 weeks) use of the area near utilization point #3, but little elsewhere due to lack of water. AUMs a reasonable estimate that could have been actually higher or lower.
6. The figure in parentheses is the Desired AUMs calculated **without** Yield Index adjustment for climate.

The "Actual Use (AUMs)" figure is the estimated amount of forage used by livestock that year. "Average Utilization" is the average of the different utilization point readings for that year, with the "Range of Utilization" showing how much the utilization varied by point and the different plant species measured. The "Yield Index" is a precipitation based index which allows for an estimate of how much the herbage yield varies from average, i.e. a yield index of 75% indicates that the yearly production was approximately 3/4th of the average. It can be thought of as a numerical rating of the growth season and is used to "adjust" the observed average utilization figure to approximate an average year.

As with most monitoring information of this type which has been collected by many people over time, the results can appear inconsistent and disproportionate in comparing one year against the others. This is particularly true for utilization and is the reason that multiple readings are collected over time and averaged; the more time/information the better in arriving at a best estimate of an average livestock carrying capacity. As outlined in BLM Technical Reference 4400-7, and summarized in the KFRA ROD/RMP (page H-73), the following formula may be applied to the utilization data to assist in the setting of a proper stocking level number:

$$\frac{\text{Actual Grazing Use (AUMs)}}{} = \frac{}{\text{Desired Use (AUMs)}}$$

Adjusted Observed Utilization (%) Desired Utilization (50%)

The formula is solved for the missing factor - in this case "Desired Use (AUMs)". Given the ROD/RMP allowable use level of 50% (page H-75), "Desired Use" would be the level of hypothetical grazing use (AUMs) that would have resulted in 50% grazing use for that year. The yearly "Desired Use" is listed in the last column of the previous utilization table.

The average proper stocking level, based on the 9 usable years of information, is 193 AUMs which is 47 AUMs less than the currently permitted maximum. This figure indicates that an average overutilization of about 20% has been occurring, based on the 50% use objective. This seems somewhat inconsistent with the 2001 upland PFC observations that strongly indicate appropriate vegetation conditions and functionality despite the use levels. One interpretation would be that the past heavy use was not so damaging as to push the plant community past an irreversible ecological threshold precluding conditions from bouncing back quickly once the grazing pressure was lessened for a few growth seasons. Another possible explanation could be that the area is resilient enough to withstand an average of 60% utilization, i.e. 20% more forage removal than the ROD/RMP objective of 50% average upland utilization. A third possibility is that the earlier utilization information is overstated. The 1980's and early 1990's information show consistently higher use levels than the later utilization data, with similar precipitation and grazing levels. The post-1992 information is within the experience of on-board BLM personnel and is believed to be more comprehensive and accurate than the earlier data. If the pre-1992 information is averaged separately, the stocking level is 168 (165) AUMs. The post-1992 average is 244 (213) AUMs - much closer to actual grazing preference.

All of these interpretations are likely true in part, but there is one further factor to keep in mind. This is that an average masks the extremes. In reviewing all the utilization data, there are almost always some areas (usually the majority of the allotment) that were used lighter, even in the overall heavy use years. These are partially indicated by the lower end of the "Range of Utilization" in the table above. When large areas of proper (or no) use are averaged with localized areas of overuse, the overused areas may be inappropriately diminished in importance. This is where use pattern mapping becomes an important and useful interpretive tool.

Specifically on this allotment, the use pattern mapping identified the ½ mile radius area around the Dehlinger water hole and the narrow (⅓ to ½ mile wide) "saddle" area, which is close to water on private lands, as habitual high use areas (see map). Regardless of the overall use levels of a given year, these two areas always exhibit the highest levels. These areas do not make up a large percentage of the total allotment acreage (~15%), but do make up a significant portion of the more gentle slope areas which cattle prefer. Because of the importance of the areas, they were purposefully selected to perform the Upland PFC ratings noted earlier. Since both areas rated out in functionally good condition, the utilization levels are of less concern than they would be otherwise. These areas are also where 3 of the 4 utilization points are, so they do receive disproportionally high consideration in the utilization readings and calculations. Regardless of how the utilization information is viewed, the two high use areas do bear continued monitoring since the possibility of detrimental resource impacts may still exist. (See the "Management Recommendations" section.)

Photo Points: In 1985, an assortment of informal (i.e. not permanently staked) photo points were

taken at various locations on the allotment. Three of these points were relocated/retaken in 2001 - a sixteen year span of time. An analysis of these photos, though qualitative and somewhat subjective, still strongly affirms what has already been discussed above. The 1985 photos show that utilization in the 1980's was very heavy and by all appearances, a detrimental impact on vegetation conditions. The 2001 photos show that since 1985, the ecological conditions of the vegetation communities have made dramatic improvement. Native perennial grasses and shrubs are considerably more abundant and robust in the recent photos with at least twice the canopy cover of 1985 and higher apparent amounts of litter protecting the ground surface. These photos help support the previous conclusion that the upland areas are in currently appropriate condition, but should be monitored in the future to ensure maintenance of those conditions.

Forage Allocation History: Between the 1969 and 1970 grazing seasons, this allotment was converted from an acreage based grazing lease (1680 acres at $0.0475 per acre) to the current AUMs based lease. For the Stukel-D.C. allotment the acres lease became a 240 AUM grazing lease, which was reaffirmed as appropriate in the 1982 Lakeview District Rangeland Program Summary, and still exists today. Based on a review of the old grazing files, it appears that all of the section 15 grazing lands in the old Lost River Resource Area (which is now part of the current KFRA) were converted from acres based to AUM based licensing during the 1968-1970 period. (The section 15 lands are essentially all the KFRA administered lands outside of the Gerber Block Grazing District.) Most of these allotments were converted at the ratio of 10 acres equaling one AUM, e.g. a 100 acre lease of BLM lands was now being leased at 10 AUMs. These conversions were not based on any type of range survey or monitoring information, but were instead converted based on the acreage and presumably some knowledge of the forage capabilities of the area in general. Given the precipitation regime of most of these section 15 areas (13"-18"), and the ecological communities that this climate can support, the 10 acres/AUM allocation is generally reasonable.

Some allotments, however, were given a more generous grazing use allocation. This includes Stukel-D.C. which was converted at the ratio of 7 acres equaling one AUM (1680 BLM acres divided by 240 AUMs). Given the higher elevation, northerly aspect, and plant communities on the allotment this rating does not seem glaringly inappropriate. If the unused and largely unusable steep slopes on the allotment are subtracted, this would leave no more than 1200 acres useable and move the ratio closer to 5 acres per AUM.. To support 240 AUMs at a 50% utilization level - with an AUM being approximately 850 lbs of forage - the 1200 acres needs to produce at least 350 lbs/acre of usable forage on average. Useable forage means primarily the perennial grasses, with some forage being provided by forbs early in the season and shrubs later. In years of near average or above moisture, the observed dominant vegetation communities in the area likely do provide adequate forage. In dry years, production may be inadequate as is implied by the utilization data. As shown in the utilization table, 5 out of 10 years were substantially below average production (<80% of average). This information does make clear the need to monitor allotment conditions closely so as to be able to shorten the grazing use in years where production deficit conditions warrant such.

Determination: ***This Standard is currently being met.***
Recent monitoring information clearly indicates that current conditions are appropriate for meeting this Standard. Because of this, the Standard must be considered met regardless of what some of the past monitoring implies. If full permitted grazing use is made consistently in the future, it is not

thought that heavy use would be common for the following reasons:

1. Exchange of use over the existing lease maximum, which was authorized in past years, is not presently authorized and will not be allowed in the future;
2. Better use supervision is in place compared to 10-15 years ago which should "catch" and limit overuse before it becomes widespread and to limit; and
3. The recent (post-1992) utilization information is thought to be more accurate than that collected in the 1980's and early 1990's. The more reliable recent information shows consistently lower utilization levels than the earlier information - during both above and below average precipitation years - and brings into question the utility of the older information in calculating a tentative stocking rate. (See "Management Recommendations" section.)

STANDARD 2 - WATERSHED FUNCTION - RIPARIAN/WETLAND AREAS
(Riparian-wetland areas are in properly functioning physical condition appropriate to soil, climate, and land form.)

> **The primary information/monitoring to be used in evaluating this Standard are observational from the use pattern mapping and miscellaneous information and file notes, with the application of professional judgement to the information by BLM personnel who have monitored the area. The indicators that this information helps address are: plant cover, litter, composition, production, age class and community structure; upland watershed conditions; level of erosion, sedimentation, and overland flow.**

There are no permanent riparian or wetland areas within the allotment, though the unnamed intermittent drainage that feeds into Dehlinger water hole has some riparian characteristics. This drainage runs across both public and private land in and out of the allotment. It is the only location on KFRA administered lands that Columbia cress (*Rorippa columbiae*) has been recorded. Columbia cress is a listed Bureau Sensitive Species, because it is on List 1 of the Oregon Natural Heritage Program (ONHP). ONHP List 1 includes taxa which are endangered or threatenend with extinction or presumed extinct throughout their entire range. The population of Columbia cress continues to be periodically monitored and that information seems to indicate that the population fluctuations are based on precipitation trends, i.e. higher (lower) precipitation, higher (lower) population. The plants were originally more numerous on the intermingled private lands, however the plants are now somewhat more abundant on the public lands than private. There is also a new population that was found at the edge of Dehlinger water hole in 2001 by rangeland monitoring personnel. Overall, the monitoring information does not appear to indicate that livestock grazing has a direct effect on the population.

There are also small portions of several other ephemeral drainages on the public lands in this allotment for which little specific monitoring information is available or probably necessary. All lie predominantly on private lands, but what there is on BLM administered lands, is in steep slope areas with limited potential for excessive grazing pressure. Field observations indicate that these drainages are in acceptable condition and of little resource concern at this time.

Determination: ***This Standard is currently being met.***

Similar to the determination for the first Standard, Standard 2 must be considered met at this time on the allotment. However, if full permitted grazing use is made consistently in the future, and heavy use becomes common, conditions may decline in the intermittent and ephemeral drainages - particularly the drainage discussed above. (See "Management Recommendations" section.)

STANDARD 3 - ECOLOGICAL PROCESSES (Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate and land form are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle.)

> **The primary information, monitoring, and indicators to be used in evaluating this Standard are those listed under Standard 1.**

Since the allotment is virtually all upland in nature, the analysis and information listed under Standard 1 is the basis for the determination under this Standard. Most important, the two Upland PFC determinations found little (*"none to slight"*) divergence from estimated reference area functionality for the three major attributes of rangeland health - *Soil/Site Stability*, *Hydrologic Function*, and *Integrity of the Biotic Community*. Though qualitative in nature, the Upland PFC determinations provide a strong indication that ecological processes are operating properly at this time. But as noted in the first two Standards, full grazing use in the future may impair this functionality if heavy use were to become chronic, though this is not expected to occur. Continued monitoring of the allotment is important to ensure that if overuse occurs in the future it does not cause irreversible resource harm.

One further ecological issue needs some discussion - western juniper (*Juniperus occidentalis*) and its place in the ecosystem of Stukel Mountain. Most portions of the Klamath Basin, above the valley floor and below about 5500', have been experiencing varying degrees of the juniper "problem". This includes juniper encroachment into vegetation commnunities - particularly big sagebrush - that previously had little to no juniper and significant density increases in areas where juniper was and should be present, though in lesser quantity. Though a native plant, in the absence of fire (a function of increased suppression and grazing related fine fuels reduction) and with the stimulus of livestock grazing reducing shrub and grass competition, juniper can increase to the point that the vegetation community is virtually a monoculture of these trees. This results in diminshed habitat capabilities for most native wildlife species, dramatically reduced forage production for all grazing animals, and frequently an environment conducive to the invasion of undesirable exotic annual grasses and forbs. Juniper increases have been and continue to be an ecological condition issue on this allotment, particularly in the mountain and basin big sagebrush communities (*Artemisia tridentata* ssp *vaseyana* and *tridentata*, respectively) and mountain mahogany (*Cercocarpus ledifolius* and *C. montanus*) sites. Future control activities will need to be pursued on many portions of this allotment if more natural (i.e. less juniper dominated) vegetation communities are to be restored.

Determination: ***This Standard is currently being met.***

As with the determination for the first Standard, Standard 3 must be considered met at this time on the allotment. See Standard 1 for the data, evaluation and determination information that is pertinent to this Standard. The juniper encroachment issue looms as a ever increasing problem and will probably be addressed as a fuels reduction issue. (See "Management Recommendations"

section.)

STANDARD 4 - WATER QUALITY (Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.)

There are no water quality impaired waters within or closely adjacent to this allotment. All of the allotment drainages, including the one mentioned under Standard 2, are disconnected from the nearest water body of concern - the Lost River - by variably developed private lands. The Lost River is a State of Oregon 303(d) listed water for an assortment of impairments. Grazing on this allotment is not thought to have any effect on the water quality of the Lost River - good or bad - though conceptually the current good vegetation conditions are likely a positive factor in inhibiting excessive run-off and sedimentation. The lands on and around the Lost River to the north and west of the allotment are all private and have an array of other impacting and disturbance factors that variably contribute to water quality problems: dense roads, gravel pits, alfalfa and potato farming, houses, pastured cows/sheep/horses/emus/llamas, canals and ditches, etc.. Outside of the cattle grazing and a few roads of variable quality on the BLM lands, none of these impacting activities are within the BLM purview. In addition, the main access road through the allotment is not BLM maintenance responsibility. Since the vegetation communities have been estimated to be functional, the cattle grazing on the Stukel D-C allotment is thought to be a non-issue in the overall water quality concerns.

Determination: ***This Standard is currently being met (or is not applicable).***

STANDARD 5 - NATIVE, T&E, and LOCALLY IMPORTANT SPECIES (Habitats support healthy, productive and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and land form.)

> **The primary information, monitoring, and indicators to be used in evaluating this Standard are those listed under Standard 1.**

Animals: The previously mentioned "mini core team" process during 1990-91, identified several wildlife concerns or items of interest relative to this allotment. The notes from that process stated the following for wildlife:

> Wildlife: The ring-tailed cat is a State Sensitive species that has been documented in the area; this is the easternmost occurrence recorded for the animal. Also, a breeding population of black-chinned sparrows has been documented in the area. Both these animals are considered rare in this part of Oregon. We need to maintain habitat for the sparrows by burning to create brush fields. This allotment contains critical deer winter range, and deer use is high; however, the browse used by the deer is being overutilized by livestock. Stukel is a possible rest stop in a raptor migration route, and this area provides opportunities for viewing raptors. On the west slope of Stukel, chukkers have been released. Because of this release, it would help to acquire access to the SW corner of section 9 for use by hunters.

This information points out the importance of the area for a multitude of wildlife species, though except for the noted deer browse problem, the issues are unrelated to livestock grazing. In the Klamath Basin, Stukel Mountain is situated like an "island" of largely undeveloped wildlands within a "sea" of developed private agricultural lands. The BLM lands on the mountain (almost ½ of the area) - though not in pristine condition - could be considered as reservoirs of comparatively stable, good condition lands in an area with the potential for drastic change due to its dominant private status.

As already noted, Stukel Mountain is an important year-round deer habitat area. During the previously noted heavy use period, competition for browse species between the deer and cattle was likely very high. One Modified Cole Browse utilization transect was established and read for serviceberry *(Amelanchier alnifolia*) in the north central portion of the allotment in 1990 (the north slope of the Stukel Mountain ridgeline). The study was read once during the fall of 1990 and again in 1991-1992, which were two of the driest back-to-back years in the last half of the 20th century. This study type makes two measurements of shrub utilization: one of the post-livestock grazing utilization (fall) and then the next spring, which in theory, measures the additional deer use. In this area, it would be expected that much of the summer/fall use would also be deer use - especially on serviceberry - so it is very hard to differentiate the different grazing animals. The 1990 fall utilization (read on 9/17/90) was 81% (severe use), though no followup spring reading was made. The next falls reading (read 9/5/01) showed slight use (11%), and the followup spring reading (5/4/92) did not record the use for some reason. This information does point out that browse use can be heavy in the area which is a concern for maintaining proper shrub communities. However, since the ecological condition of the vegetation communities are currently good it is thought that this competition is not currently a problem, but bears close monitoring in the future. (See "Management Recommendations" section). The juniper encroachment issue, as discussed under Standard 3 is also a wildlife habitat issue.

Plants: The Columbia cress was discussed under Standard 2. No other special status plants are known to exist within the allotment.

Determination: ***This Standard is currently being met.***
As with the determination for the first two Standards, Standard 5 must be considered met at this time on the allotment. See Standards 1 and 2 for the data, evaluation and determination information that is pertinent to this Standard.

* * *

Management Recommendations:

Although this Assessment has determined that current conditions on the allotment are appropriate, past monitoring and observational information indicates some potential for resource problems with maximum, every year grazing use. Though these problems are not at all certain, it is believed prudent to pursue several management actions that would help lessen the *potential* for future problems. After completion of this Assessment, the first two management actions recommended

below will be discussed with the current grazing lessee and pursued as *voluntary* actions on their part. If no voluntary agreement is achieved **and** overutilization occurs regularly, the grazing reductions outlined in recommendations 3 & 4 below would be pursued - either by formal agreement (43 CFR 4110.3-3) or the issuance of a grazing decision (43 CFR 4160). Both of these actions entail formal changes to the existing grazing lease. The recommendations, in descending order of importance, are as follows:

1. A grazing system should be established and implemented. There is some opportunity with the current lessee (base property lessee) of working out an expanded rotation system as this lessee also has the neighboring - and larger - Jeld-Wen allotment (#0822). Combining the two allotments into one multi-pasture, deferred-rotation grazing system would have advantages to the resource, while not affecting the total combined stocking levels. This system could be of particular benefit to the operator by helping preclude the potential for a grazing use reduction on allotment #0815. A proposed grazing schedule is as listed below using allotment #0815 as a pasture in conjunction with the three #0822 pastures. The combined use would be for 150 head/pairs from 5/1 through 8/15:

	#0815 1.	**North Past.** 3.	**South Past.** 3.	**Central Past.** 3.
Year 1	5/1 - 5/27	5/28 - 6/23	6/23 - 7/19	7/19 - 8/15 2.
Year 2	5/28 - 6/23	5/1 - 6/10	7/19 - 8/15 2.	6/23 - 7/19
Year 3	6/23 - 7/19	7/19 - 8/15 2.	5/1 - 6/10	5/28 - 6/23
Year 4	7/19 - 8/15 2.	6/23 - 7/19	5/28 - 6/23	5/1 - 6/10

1. The Stukel-Dehlinger C. allotment (#0815) could potentially be grazed as a two-pasture system itself, adding another pasture to the overall rotation. It was once divided into a West and East pasture (see #0815 Assessment). This may be addressed in the future.
2. Use after 8/15 would have to be on discretely fenced private lands (e.g. Jeld-Wen, Inc. leased lands) since the BLM lease flexibility allows for use only through early/mid August.
3. North, South & Central pastures are all part of allotment #0822. Logistically, it may be necessary to combine the Central pasture with either the North or South pasture to make an effective rotation system.

To make this system work, rehabilitation and yearly maintenace of the internal pasture fences would be required. Since extensive maintenance/reconstruction may be necessary, full implementation of the system could take some years to complete. The rotations assume that cattle enter and leave the area through the Jeld-Wen allotments South pasture, but could be trailed to/from any of the pastures to begin/end use. Although all of the pastures are intermingled with private, the Central pasture is Jeld-Wen, Inc. dominated, though there is some adjacent BLM. This pasture also includes the private lands along Hidden Valley Road (from Crystal Springs Road to the Jeld-Wen owned reservoir in the SE 1/4 of section 35) that are fenced separately. These fences integrity are unknown but suspected to be poor to dysfunctional. (See the Jeld-Wen (#0822) Assessment for more information.)

If the above rotation can not be implemented, at a minimum, the previously implemented two pasture grazing system for #0815 should be resumed for. This rotation entails the continued maintenance of the internal drift fence, with the placing of cattle west of the fence during the early portion of the licensed use period (4/15 to 5/10) with the cattle moved east after 5/10 for the remainder of the season which ends 8/8.

2. The exchange-of-use for the intermingled private lands should not be re-authorized. Exchange-of-use is a discretionary action under grazing regulations (43 CFR 4130.6-1), which state, in part, that this use must "*...be in harmony with the management objectives for the allotment...*". This additional use may have been a key factor in the overgrazing that was common in the 1980's and early 1990's. If the land owners wish to make more use of their private lands, they may always fence and use them separately from the public land grazing.

3. Reduction in the length of the grazing season may also be useful and was proposed in the KFRA ROD/RMP. Specifically, that plan proposed a season-of-use of 5/1 to 7/1. With the same amount of cattle now authorized (63 head) this grazing season reduction would effectively reduce the AUMs authorized to 126 AUMs, well below the amount listed in #4 below. At the 200 AUM level (next recommendation) 100 head could be grazed and at 240 AUMs (the existing lease), 120 head could be grazed with the 5/1-7/1 season. After 3-5 years of grazing with the implementation of the first two recommendations above, this recommendation may need to be implemented if further livestock management action is needed. In below average years, resource conditions may warrant an early removal of the livestock. This would be addressed on a year-to-year basis as identified by field checks (see recommendation #5).

4. A reduction in grazing use, from the current lease maximum of 240 AUMs, to 200 AUMs may need to be implemented if livestock overutilization is chronic. 200 AUMs is very close to the monitoring derived figure of 193 AUMs discussed under Standard 1. If regular heavy use were to occur regularly, this AUM figure would be the likely decisioned amount, because it is based on "*...periodic observation and orderly collection of data...*" (43 CFR 4100.0-5) - i.e. monitoring data - which is the required basis for supporting decreases in permitted use (43 CFR 4110.3-2). It is not thought necessary to make this cut at this point, because current allotment vegetation conditions are satisfactory and implementation of the first two management recommendations above may ensure a continuation of these good conditions. If the first three management recommendations do not "fix" the grazing use problems that may arise in the future, then this AUM reduction may have to be implemented formally.

5. Rangeland monitoring studies will continue to be collected as scheduled in the KFRA Monitoring Plan. This includes the reading of utilization (points and mapping as necessary) every three years, periodic re-reading the established Cole Browse study (as necessary), retaking of the photo points every 3-5 years (retaken points are now GPS'd for easier relocating), and the possible establishment of a nested frequency trend plot dependent on other priorities and available manpower. Monitoring is especially important over the next 5-10 years in order to ascertain the appropriateness of the current lease levels.

6. As in the past, yearly use supervision will also take place to ensure that the grazing use is within approved parameters (numbers, season-of-use), that drift/trespass is not occuring or is stopped quickly if discovered, and to provide early warning of possible excessive use. If excessive use is noted or predicted to occur before the licensed grazing use expires, the lessee would be asked to move their cattle early. Lessee cooperation in this regard will be considered in the future implementation of more drastic changes in the grazing lease parameters.

7. Juniper treatment/reduction should be undertaken within vegetation types where young western juniper is encroaching or increasing beyond the ecological site description defined normal range of variation. Of particular importance would be the removal of the majority of the trees from any of the mountain big sagebrush, mountain mahogany, and bitterbrush potential ecological sites, which are common on the allotment.

8. Periodic monitoring of the Columbia cress population and its habitat should be continued.

* * *

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Determination

( ) Existing grazing management practices and/or levels of grazing use (i.e. potential grazing use as per RMP) on the Stukel-Dehlinger C. allotment promotes achievement or significant progress towards the Oregon Standards for Rangeland Health and conform with the Guidelines for Livestock Grazing Management (Appendix 1).

( ) Existing grazing management practices and/or levels of grazing use (i.e. potential grazing use as per RMP) on the Stukel-Dehlinger C. allotment will require modification or change prior to the next grazing season to promote achievement of the Oregon Standards for Rangeland Health and conform with the Guidelines for Livestock Grazing Management.

_____

Manager, Klamath Falls Resource Area Date

APPENDIX 1

Guidelines for Livestock Grazing Management

Guidelines for livestock grazing management offer guidance in achieving plan goals, meeting standards for rangeland health and fulfilling the fundamentals of rangeland health. Guidelines are applied in accordance with the capabilities of the resource in consultation, cooperation, and coordination with permittees/lessees and the interested public. Guidelines enable managers to adjust grazing management on public lands to meet current and anticipated climatic and biological conditions.

General Guidelines

A. Involve diverse interests in rangeland assessment, planning and monitoring.

B. Assessment and monitoring are essential to the management of rangelands, especially in areas where resource problems exist or issues arise. Monitoring should proceed using a qualitative method of assessment to identify critical, site-specific problems or issues using interdisciplinary teams of specialists, managers, and knowledgeable land users.

Once identified, critical, site-specific problems or issues should be targeted for more intensive, quantitative monitoring or investigation. Priority for monitoring and treatment should be given to those areas that are ecologically at-risk where benefits can be maximized given existing budgets and other resources.

Livestock Grazing Management

A. The season, timing, frequency, duration and intensity of livestock grazing use should be based on the physical and biological characteristics of the site and the management unit in order to:

a. provide adequate cover (live plants, plant litter and residue) to promote infiltration, conserve soil moisture and to maintain soil stability in upland areas;
b. provide adequate cover and plant community structure to promote streambank stability, debris and sediment capture, and floodwater energy dissipation in riparian areas.
c. promote soil surface conditions that support infiltration;
d. avoid sub-surface soil compaction that retards the movement of water in the soil profile;
e. help prevent the increase and spread of noxious weeds;
f. maintain or restore plant communities to promote photosynthesis throughout the potential growing season;
g. maintain or restore plant communities to promote photosynthesis throughout the potential growing season;
h. promote soil and site conditions that provide the opportunity for the establishment of desirable plants;
i. protect or restore water quality; and
j. provide for the life cycle requirements, and maintain or restore the habitat elements of native (including T&E, special status, and locally important species) and desired plants and animals.

2. Grazing management plans should be tailored to site-specific conditions and plan objectives. Livestock grazing should be coordinated with the timing of precipitation, plant growth and plant form. Soil moisture, plant growth stage and the timing of peak stream flows are key factors in determining when to graze. Response to different grazing strategies varies with differing ecological sites.
3. Grazing management systems should consider nutritional and herd health requirements of the livestock.
4. Integrate grazing management systems into the year-round management strategy and resources of the permittee(s) or lessee(s). Consider the use of collaborative approaches (e.g., Coordinated Resource Management, Working Groups) in this integration.

5. Consider competition for forage and browse among livestock, big game animals, and wild horses in designing and implementing a grazing plan.
6. Provide periodic rest from grazing for rangeland vegetation during critical growth periods to promote plant vigor, reproduction and productivity.
7. Range improvement practices should be prioritized to promote rehabilitation and resolve grazing concerns on transitory grazing land.
8. Consider the potential for conflict between grazing use on public land and adjoining land uses in the design and implementation of a grazing management plan.

Facilitating the Management of Livestock Grazing

1. The use of practices to facilitate the implementation of grazing systems should consider the kind and class of animals managed, indigenous wildlife, wild horses, the terrain and the availability of water. Practices such as fencing, herding, water development, and the placement of salt and supplements (where authorized) are used where appropriate to:

   a. promote livestock distribution;
   b. encourage a uniform level of proper grazing use throughout the grazing unit;
   c. avoid unwanted or damaging concentrations of livestock on streambanks, in riparian areas and other sensitive areas such as highly erodible soils, unique wildlife habitats and plant communities; and
   d. protect water quality.

2. Roads and trails used to facilitate livestock grazing are constructed and maintained in a manner that minimizes the effects on landscape hydrology; concentration of overland flow, erosion and sediment transport are prevented; and subsurface flows are retained.

Accelerating Rangeland Recovery

1. Upland treatments that alter the vegetative composition of a site, like prescribed burning, juniper management and seedings or plantings must be based on the potential of the site and should:

   a. retain or promote infiltration, permeability, and soil moisture storage;
   b. contribute to nutrient cycling and energy flow;
   c. protect water quality;
   d. help prevent the increase and spread of noxious weeds;
   e. contribute to the diversity of plant communities, and plant community composition and structure;
   f. support the conservation of T&E, other special status species and species of local importance; and
   g. be followed up with grazing management and other treatments that extend the life of the treatment and address the cause of the original treatment need.

2. Seedings and plantings of non-native vegetation should only be used in those cases where native species are not available in sufficient quantities; where native species are incapable of maintaining or achieving the standards; or where non-native species are essential to the functional integrity of the site.

3. Structural and vegetative treatments and animal introductions in riparian and wetland areas must be compatible with the capability of the site, including the system's hydrologic regime, and contribute to the maintenance or restoration of properly functioning condition.